UltraCane

USER GUIDE

Congratulations on your purchase of the **UltraCane** mobility aid from Sound Foresight Technology Ltd. We hope that it proves to be a valuable and helpful aid to your mobility. With care, your UltraCane should give you many years of trouble-free use.

Please read these instructions carefully before using your new UltraCane, and keep them in a safe place for future reference.

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Getting Started

Your new UltraCane consists of a conventional folding white cane attached to a special handle containing an ‘ultrasound radar’ system to detect objects and obstacles in the environment, similar to the system used by bats. The handle features a hand-grip with two yellow feedback buttons on the upper surface, and two ultrasound sensors that face forwards and upwards. The handle also contains the battery compartment.

Warning: Two large ultrasound sensors are positioned at the front of the handle. Do not press these or try to manipulate them in any way. Any damage to these sensors may cause the product to perform poorly.

Take care when unpacking, as the folded sections of the white cane are held together under tension by an elastic bungee in a similar manner to a traditional white cane, and they will snap together when unfolded.

Your UltraCane is supplied with a replaceable hook-on cane tip, a protective carry bag, and batteries pre-installed. A spare set of batteries is also supplied.

An adjustable wrist strap is attached to the rear of the handle and this can be looped around the wrist during normal use. The wrist strap also has a ‘Snap Lock’ quick release safety feature. This allows the strap to be separated from the handle by giving it a sharp tug. Note that this feature should only be used in an emergency situation, such as if the UltraCane becomes trapped in closing doors.

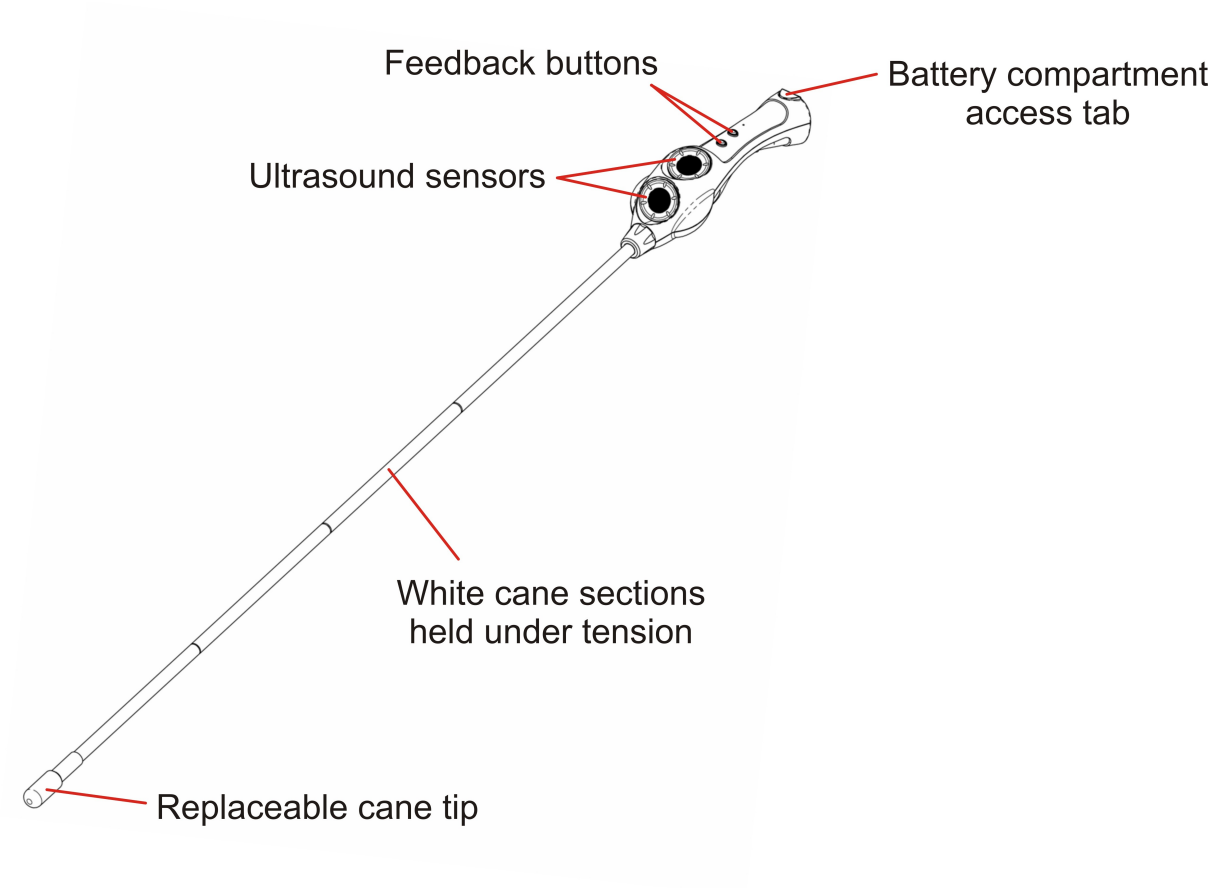

Figure: The UltraCane and its component parts

Switching On & Range Selection

The On/Off switch is located on the underside of the handle. The switch has three positions: **Off**, **On (Short Range)** and **On (Long Range)**.

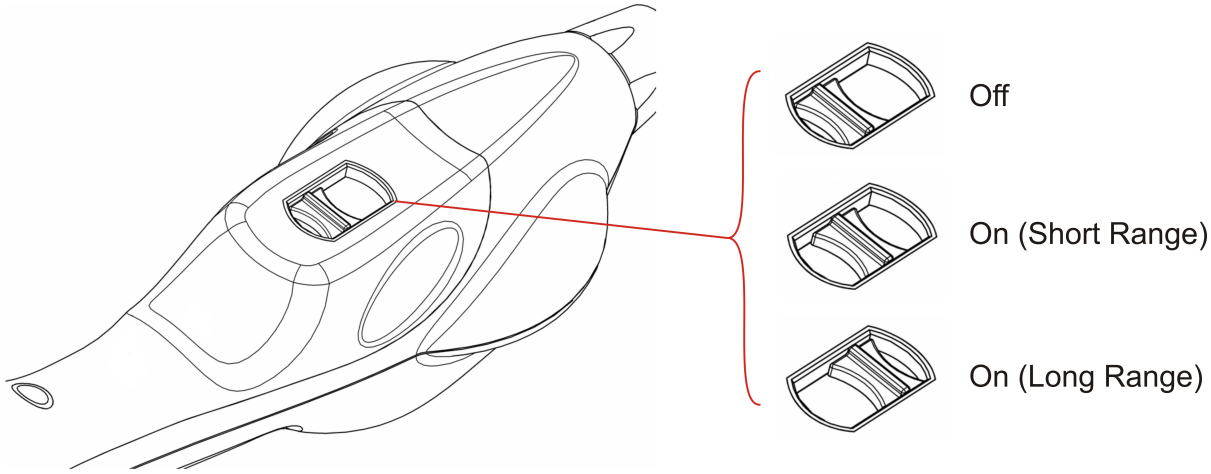

Figure: The On/Off switch

When Short Range is selected the UltraCane will detect obstacles that are within approximately 2.1 metres / 7 feet of the handle in the forward direction.

When Long Range is selected the UltraCane will detect obstacles that are within approximately 4 metres / 13 feet of the handle in the forward direction.

Note that the Range setting only applies in the forward direction. The detection range in the upward direction is fixed at approximately 1.6 metres / 5 feet from the handle.

Note: When the UltraCane is switched on you will hear 'ticking' from the ultrasound sensors. This is normal. The ticking rate decreases 16 seconds after switch-on.

2-Tone Range Indication Beep Sequence

A 2-tone beep sequence will be heard each time the switch is moved between the two range settings. The length of the second beep provides an indication of which setting you have selected: a short beep for Short Range and a longer beep for Long Range.

Holding Your UltraCane

The UltraCane is designed to be used in either hand and should be held so that the thumb *lightly* covers the two small yellow buttons. If the cane length is correct then the hand position will feel natural to the user, and the ultrasound sensors will be angled for best performance.

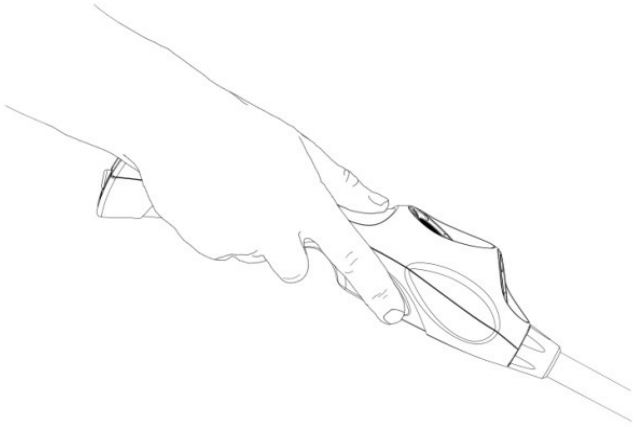

Figure: Hand position

When the UltraCane is switched on, the two buttons will buzz as obstacles are detected. The button nearest the front of the handle will buzz when obstacles are detected by the sensor facing forwards, and the button nearest the back of the handle will buzz when obstacles are detected by the sensor facing upwards. This combination gives the user an indication of obstacles immediately ahead of them, from ground level to head height, but in a relatively narrow 'corridor'. The buzz rate of the buttons increases as you move closer to obstacles.

Note: It is important that you do not press the buttons as this will deaden the buzz intensity. You should experiment with your hand position to get maximum sensitivity. The wearing of thick gloves is not recommended as this will also deaden the intensity.

Battery Warnings

When the batteries are getting low the UltraCane will sound a '**Low Battery**' warning. This consists of a **single short beep**, which will repeat every 5 minutes until the batteries are replaced. The UltraCane will continue to function normally during this period.

When the batteries have reached the end of their useful life a '**Flat Battery**' warning will be heard. This consists of **three long beeps**, which

will repeat every 5 minutes until the batteries are replaced. As a safety feature, the UltraCane will *not* detect objects when the battery is 'flat'. The batteries should be removed and replaced. Note that if the cane is switched off when the Flat Battery warning is heard, and is then switched back on again shortly afterwards, the batteries might have recovered enough for the UltraCane to function normally for a few more minutes. This is normal.

Changing the Batteries

Battery *Compartments*

UltraCane uses two AA batteries, which are located in the battery compartment at the rear of the handle. It is recommended that a quality brand of alkaline battery is used to give the longest operating life. Rechargeable batteries can be used but are not recommended as their charge can drop off very suddenly. It is wise to always keep a spare set of fresh batteries in the small pocket inside the UltraCane carry bag.

To access the battery compartment gently lift the *rounded* upper tab of the rubber door cover at the rear of the unit, and then use your thumb to open the hinged plastic door by pressing down and pulling back at the same time. Do not attempt to open the door by pulling on the rubber tab, and do not attempt to lift the tab on the hinge side of the door cover.

When inserting fresh batteries, the smooth negative terminal (-) of one battery faces the spring contact on the inside of the hinged door, and the raised positive terminal (+) of the other battery faces the smooth contact of the door. Close the door so that it clicks into place and then press down on the rubber tab so that it is seated securely.

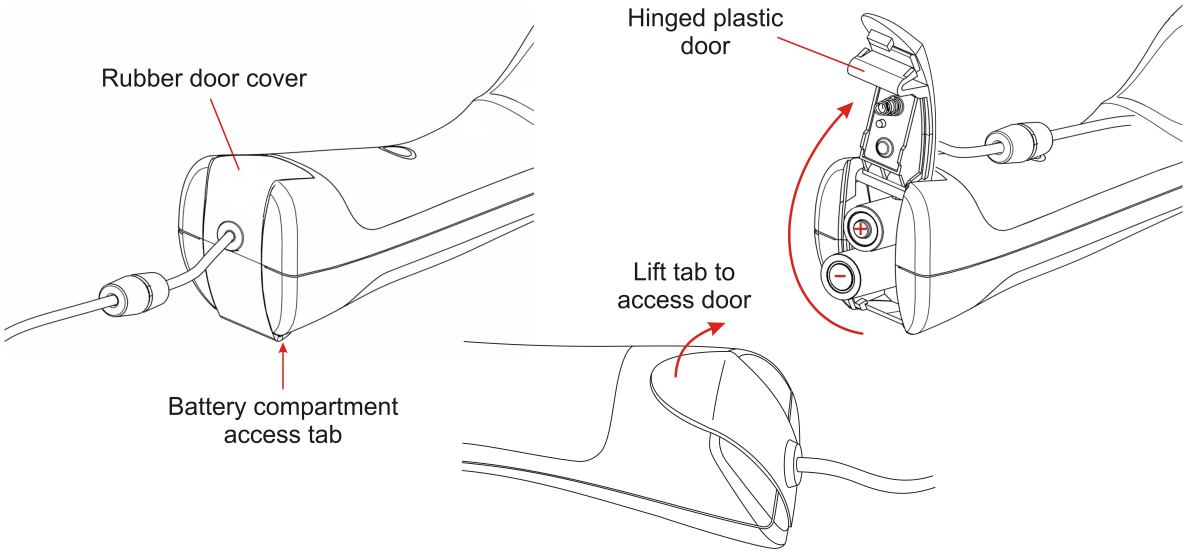

Figure: Battery compartment access

Folding Your UltraCane

When folding away your UltraCane, always fold the white cane sections from the handle end first and keep the sections against the back (switch-side) of the handle. Secure the cane sections against the handle using the wrist strap.

Warning: Take care not to damage the two ultrasound sensors when folding the cane.

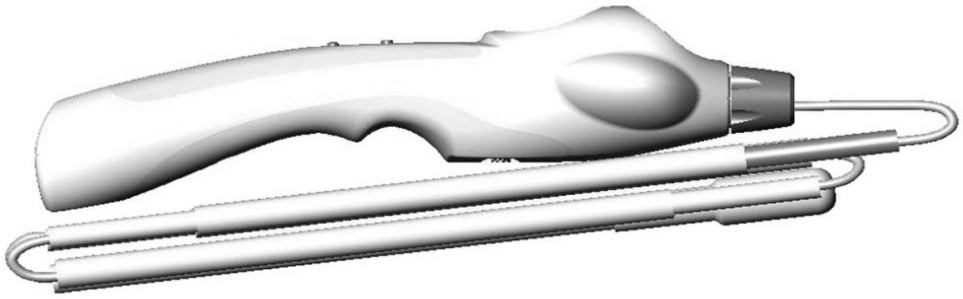

Figure: Folded UltraCane

Changing the Cane Tip

Your UltraCane is supplied with a hook-on style cane tip attached. If you wish to change or replace the tip, first unfold the UltraCane, ensuring that all sections are fully engaged, and then pull the tip out of the base of the cane to expose the bungee cord. A rubber sleeve has been placed on the cord a few centimeters below the tip. Hold or place a finger under this rubber sleeve to take up the tension in the bungee and then unhook the cane tip. Hook on the new tip, let go of the rubber sleeve, and then gently allow the new tip to retract into the cane.

If you accidently let go of the bungee you will need to pull it back through the cane sections. The technique to do this is explained in the Troubleshooting section.

Using Your UltraCane

When you are familiar with the controls and comfortable with your hand position then you are ready to try walking and navigating with your UltraCane. It is recommended that the first time you do this you do so in an area that is very familiar to you. Please also review the instructional exercises guide in advance.

Q. Should I use the UltraCane like a "traditional" white cane?

The "traditional" white cane is used by moving the cane from side to side in a tapping or sliding motion where the next footstep will fall. This ensures that obstacles can be detected in the user's immediate vicinity by utilizing the tip of the cane to *touch* the obstacle.

The UltraCane has been designed as a primary mobility aid for vision impaired people, as it incorporates a white cane. However, obstacle detection is obtained via the ultrasound sensors incorporated into the handle, thus giving more advanced warning to the user of obstacles in their path and at head/shoulder height.

When using the UltraCane, it is important to use traditional white cane skills such as Shorelining, Arc and Sweeping techniques, especially for locating down drops such as kerbs and steps. These techniques and other instructions are described in more detail for use with the UltraCane in the instructional exercises guide, which should be read in conjunction with this user guide.

Q. Should I use Short Range or Long Range?

When you first start using the UltraCane, experiment with it on both range settings. If you find that the front button is buzzing too frequently, giving you 'too much' feedback, then you might need to keep the cane switched on to Short Range. This depends very much on your environment and how crowded it is with objects and obstacles. Long Range is not really suitable for indoor use, but you might find Long Range to be more useful when you are outdoors in less crowded areas.

In general, deciding which range to use in a given situation is a matter of personal preference and level of experience with the UltraCane. In any given journey, you may wish to occasionally change ranges to suit your surroundings as you proceed on your way. Alternatively you might choose to always use it on the Short Range setting.

Reminder: The detection ‘zone’ of the upper sensor is not affected by the range setting of the switch, and is fixed at approximately 1.6 metres / 5 feet.

Q. How sensitive is the UltraCane?

The UltraCane will typically detect a lamp post 4 metres away. This will help you avoid roadside signposts etc as you make you way along the pavement. It will detect smaller objects, especially if they have flat surfaces and you are directly in front of them. It will detect smaller diameter bars and posts closer in, as well as bushes, plants, and fabrics. Obstacles such as bags lying on the floor 3 – 4 metres away will be picked up in Long Range mode but possibly not in Short Range as they might be out of the ultrasound ‘beam’.

Q. Is there anything the UltraCane won’t detect?

It is not possible for the UltraCane to detect *drops* in ground level, such as stairs, kerbs and holes and therefore it is important to maintain good traditional cane skills when using the UltraCane to locate down drops.

The UltraCane might not detect soft fabrics or small obstacles at the limit of the range setting. As a rule it works best with hard surfaces, as these give a stronger ultrasound echo.

The UltraCane will not detect objects within 30 cm / 12 inches of the sensors.

The UltraCane detects objects by ‘shining’ a beam of sound out into the environment over the tip of the cane. This means that the UltraCane has a small ‘quiet zone’ close to the cane tip where it cannot detect low-height objects (such as rising kerbs at the side of the road). The size of the quiet zone depends on the length and angle of the cane and the height of the object. In general, you will have more warning of the presence of low-height objects on the long range setting.

Q. Is there anywhere the UltraCane has difficulties detecting objects?

Some surfaces, such as long grass or rough or stony ground can cause unwanted sound echoes that can make the UltraCane vibrate occasionally when there may be no object present. Take extra care when navigating these types of terrain.

Some types of car reversing sensors use the same type of ultrasonic signals as the UltraCane and may cause it to vibrate inappropriately. Take extra care when in the presence of reversing cars.

Two or more UltraCanes being used together in close proximity may interfere with each other. This can lead to either cane vibrating inappropriately from time to time.

Q. Can I use my UltraCane in the rain?

The UltraCane has been designed to work normally in light rain showers without any problems. However heavy or torrential rain will stop your UltraCane from working properly and should be avoided. Prolonged or repeated exposure to water or heavy rain must be prevented at all costs as it may cause permanent water-damage to your UltraCane. If you are out with your UltraCane and are caught in heavy rain, you should immediately switch the cane off and fit the rain cover provided to protect it during the period of heavy rain. You can continue to use the UltraCane to navigate as a traditional white cane during the rain but the object detection functions will not be available whilst the cover is fitted. You can remove the cover, switch on your UltraCane and continue your journey as normal once the rain passes. If your cane does get wet, allow it to dry naturally in the open air at room temperature.

Q. Do I need training to use the UltraCane?

If you already use a long white cane, you should find using the UltraCane straight forward to adapt to. The feedback you receive through your thumb accesses a part of the brain that creates mental maps, so when your brain has become used to the signals you will find that you can move around with less effort than before.

To assist you further we have developed some UltraCane training techniques, which you will receive along with the user guide. There are also many rehabilitation and mobility officers who have undergone training in the UltraCane. You should contact your local mobility officer for further guidance.

Q. What should I do if my UltraCane stops working?

The UltraCane is modeled on the traditional white cane and so in the unlikely event that the electronics fail while you are out, you will still be able to use it as a traditional white cane to reach your destination.

Troubleshooting

Q. My UltraCane doesn't seem to be working. What should I do?

A. Check that the batteries have been installed correctly. Try replacing the batteries with fresh ones.

Q. While attempting to fit a new tip I accidently let the bungee slip and now the cane is slack. How do I re-fit the bungee?

A. Simply remove sections of cane from the tip end until the bungee loop is accessible, and then attach a long length of thin string or thin wire through the bungee loop. Feed this string or wire back through the removed sections of cane, and then use it to pull the bungee loop all the way through so that you can hook on your cane tip.

If all the cane sections have come off the bungee then, before reassembling the cane, you will need to identify which section goes into the handle and which goes at the tip. Note that only one of the sections will fit into the handle, and only one of the remaining sections will be the correct 'snug' fit for the tip. The correct tip section has a larger white ferrule. If a section will not engage into the handle then it is a mid-section or the tip section. Do not force a section into the handle. If after reassembly the tip seems to be very wobbly in the cane, then the section with the white ferrule has ended up in the middle of the cane. Remove the tip and re-order the cane sections accordingly.

Q. How can I check that my UltraCane is working properly?

A.
- Listen for the 2-tone switch-on beep sequence.
- Listen for the ticking from the sensors.
- Wave your hand in front of each sensor in turn at a distance of approximately 1 metre and check for buzzing from the buttons.

Q. How do I get help?

A. Contact the manufacturer via the website (www.ultracane.com).

Product Care and Maintenance

- Do not use liquid or aerosol cleaning agents, thinners, abrasive or corrosive materials on your UltraCane. Use a damp cloth to wipe off any dirt or marks.
- Do not allow liquids to spill onto your UltraCane or subject it to excessive smoke, dust, mechanical vibration or shock.
- Do not immerse your UltraCane in water.
- Do not drop your UltraCane.
- Do not store your UltraCane near heat sources such as radiators, cookers, etc.
- Do not use your UltraCane for other than the intended use, e.g. as a walking stick.
- Do not keep credit cards and transport tickets with magnetic strips next to the UltraCane when it is operating; it could affect the data on the magnetic strip.
- Do not leave your UltraCane within reach of young children. The product is not a toy.
- Do not attempt to open up your UltraCane other than to replace the batteries using the hinged door. There are no user serviceable parts inside the unit and opening up the product in any other way will invalidate the warranty. Contact your retailer or our customer service department if the product requires attention.
- Do remove batteries before storing your UltraCane for extended periods of time.
- Do not leave discharged batteries in the product as they may leak and cause corrosive damage.
- Do not mix old and new batteries.
- Do not dispose of old batteries in a fire as they may explode.
- Do not open or mutilate the batteries. Released electrolyte from the batteries is corrosive and may cause burns or injury to the eyes or skin. The electrolyte may be toxic if swallowed.

The technical specifications for this product and the contents of the User Guide are subject to change without notice.

This product is not intended for use by children without supervision.

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This symbol on the product and accompanying documents means that the product is covered by the European Directive 2002/96/EC.

All electrical and electronic products should be disposed of separately from the municipal waste stream via designated collection facilities appointed by the government or the local authorities.

The correct disposal of your old appliance will help prevent potential negative consequences for the environment and human health.

For more detailed information about disposal of your old appliance, please contact your city office, waste disposal service or the supplier.

Please contact your local authority for further details of your nearest designated collection point.

Information on Disposal in other Countries outside the EU

This symbol is only valid in the European Union. If you wish to discard this product please contact your local authorities or dealer and ask for the correct method of disposal.

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